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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/537,583	12/14/2005	Katherine Ann Vousden	2543-1-041PCT/US	4893

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EXAMINER
OGUNBIYI, OLUWATOSIN A

ART UNIT	PAPER NUMBER
1645	

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/537,583	<b>Applicant(s)</b> VOUSDEN, KATHERINE ANN	
	<b>Examiner</b> Oluwatosin Ogunbiyi	<b>Art Unit</b> 1645	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 November 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,8,14-16 and 18-22 is/are pending in the application.
- 4a) Of the above claim(s) 14-16 and 18-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 8 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

Claims 1, 8, 14-16 and 18-22 are pending. Claims 2-7, 9-10 and 17 are canceled.

Claims 1 and 8 are under examination

### **REQUEST FOR CONTINUED EXAMINATION**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/5/07 has been entered.

### ***Claim Objections***

Claim 8 is objected to because of the following informalities: '*albicans*' is misspelled. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly

connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 8 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claim is drawn a method of screening or testing for candidate anti-fungal compounds that impair *Candida albicans* ATP (CTP): tRNA nucleotidyltransferase enzyme (CCA1) activity comprising:

- a) providing a *C. albicans* cell wherein the cell expresses *Candida albicans* ATP (CTP): tRNA nucleotidyltransferase enzyme (CCA1) under the control of a heterologous promoter
- (b) providing one or more candidate compounds;
- c) contacting said *Candida albicans* cell(s) with said one or more candidate compounds;
- d) inducing said promoter;
- e) determining whether the candidate compound is a CCA1 inhibitor.

The nature of the invention as set forth supra involves screening or testing for an anti-fungal compound that impairs *C. albicans* CCA1 in a *Candida albicans* cell expressing CCA1 under the control of a heterologous promoter by determining whether the candidate compound is a CCA 1 inhibitor.

The specification on p.2 line 38 teaches that CCA1 is an essential protein for the fungal species *Candida*. Example 4 on p. 10 provides a demonstration of CCA1 as an essential gene

product in *Candida albicans*. A *Candida albicans* strain with one copy of the CCA1 gene under the control of tetracycline inducible promoter expresses CCA1 under strong induction i.e. without tetracycline and does not express CCA1 under tight repression i.e. with tetracycline. Under CCA1 expression, there is cell growth and no significant growth was observed when CCA1 is repressed (p. 11 example 4.2).

The method as claimed does not provide for how to determine whether the candidate compound is a CCA1 inhibitor after contacting said *C. albicans* cell expressing *C. albicans* CCA1 with said one or more candidate compounds.

For this claimed method the specification only gives guidance as to how to determine that a candidate compound is a CCA1 inhibitor in an eukaryotic cell (such as *C. albicans*) expressing CCA1 (p. 5 lines 23-30). The method entails that after contacting said *C. albicans* cell expressing *C. albicans* CCA1 with said one or more candidate compounds, the interaction of the candidate compound with CCA1 is assessed by determining the effect on growth and viability of said cells.

However, this in vivo assay system for screening or testing for an anti-fungal compound that impairs *C. albicans* CCA1 function does not take into account that there are more than one essential genes in *C. albicans* (Song et al. Microbiology (2003), 149:219-259, Veses et al. Eukaryotic Cell (2005), p. 1088-1101, Bruno et al. Trends in Microbiology (2004) 12: 157-161, p.159, table 2) and also a compound may have multiple targets including CCA1. The claim requires contacting a candidate compound with a *Candida albicans* cell(s) expressing CCA1. If negative effects on growth or viability are seen in said cell(s), how does one of skill in the art determine that said negative effect is due to impairment of CCA1 by the candidate compound? The specification does not correlate impairment of growth or viability with the direct impairment

with CCA1. The assay described in the specification does not provide any guidance or direction as to how to rule out the effects of such compound on other essential genes in said *C. albicans* expressing CCA1. Further, this in vivo assay for screening or testing for an anti-fungal compound that impairs *C. albicans* CCA1 and that described in the claim does not take into account that there is endogenous CCA1 in the cells expressing *Candida albicans* CCA1.

For example, Onishi et al (Feb. 2000, Antimicrobial Agents and Chemotherapy p. 368-377 cited in previous action) teaches a screen for in vitro antifungal activity of several compounds by a growth inhibition assay (page 369 column 1 materials and methods and table 1) and then the compounds were evaluated to determine whether said compounds were direct inhibitors of the enzyme by measuring the enzyme's activity in the presence of said compounds (page 370 column 2 first full paragraph, page 373 column 1 - 2 and table 4). Onishi et al takes into account that the fungal cell expresses the enzyme naturally and Onishi et al do not over express the enzyme in the same fungal cell. Instead Onishi et al assesses growth inhibition and then screens for enzyme activity in vitro in the presence of the potential anti-fungal.

Assessing inhibition of growth does not provide any knowledge about the effect of the compound on CCA1 activity because as mentioned above a compound may have more than one target in said *C. albicans* expressing CCA1 including CCA1. Furthermore, an anti-fungal compound has many different activities (see Ghannoum et al. 1999. Clinical Microbiology Reviews, p. 501-517 for different mode of actions of some anti-fungal compounds, cited in previous office action) and these compounds would inhibit growth but do not have to impair activity of CCA1. As such, impairment of growth is not directly correlated with impairment of CCA1 activity in the method of screening set forth in the specification i.e. method of determining whether the candidate compound inhibits CCA1 in the *C. albicans* cells expressing CCA1. Claim 8 does not teach how to determine whether the candidate compound is a CCA1 inhibitor.

The method for performing such determination as disclosed in the specification and set forth above i.e. assessing effects on growth and viability does not does not correlate impairment of growth or viability with the direct impairment of CCA1 function or activity.

In view of the above, it would require undue experimentation for the skilled artisan to use the invention as claimed.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Weinstock et al. US 6,747,137 B1 published Jun. 8, 2004, filed Feb 12, 1999.

The claims are drawn to a method of screening or testing for candidate anti-fungal compounds that impair *Candida albicans* ATP(CTP):tRNA nucleotidyltransferase enzyme (CCA1) activity comprising:

- a) providing fungal *Candida albicans* CCA 1;
- b) providing one or more candidate compounds;
- c) contacting said CCA 1 with said one or more candidate compounds; and
- d) determining the ability of the candidate compound to inhibit CCA1 activity.

Weinstock et al teaches a method of screening test compounds for anti-fungal activity comprising providing a *Candida albicans* target sequence such as *Candida albicans* tRNA nucleotidyl transferase also known as CCA1 (table 2 columns 587 and 588 contig3807) and contacting a test compound and determining binding of the test compound to said CCA1 to determine whether said compound has anti-fungal activity ( i.e. whether anti-fungal inhibits CCA1 activity). See column 10 lines 28-45, column 20 lines 46-67 to column 21 lines 1-54 (for description of table 2 which discloses *Candida albicans* CCA1).

#### **Status of Claims**

Claims 1 and 8 are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Oluwatosin Ogunbiyi whose telephone number is 571-272-9939. The examiner can normally be reached on M-F 7am-4pm.




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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shanon Foley can be reached on 571-272-0898. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Tosin Ogunleye

  
**PATRICIA A. DUFFY**  
**PRIMARY EXAMINER**